people. With the former all men of science are in substantial accord; against the latter argument is almost futile. It has been said that as everyone has a blind spot in his eye so everyone has an idiotic spot in his brain. Anti-vivisection is the idiotic spot of many estimable persons. Regarding the merits of the bill limiting research in the District of Columbia, now pending in the Senate, we cannot do better than refer our readers to a report adopted by the National Academy of Sciences. The report states that physiology must be studied by experimental methods. The physiologist, no less than the physicist and the chemist, can expect the advancement of science only as the result of carefully planned laboratory work. If this work is interfered with, medical science will continue to advance by means of experiment, for no legislation can affect the position of physiology as an experimental science. But there will be this important difference. The experimenters will be medical practitioners and the victims human beings. That animals must suffer and die for the benefit of mankind is a law of nature, from which we cannot escape if we would. But the suffering incidental to biological investigation is trifling in amount and far less than that which is associated with most other uses which man makes of the lower animals for purposes of business or pleasure. The men engaged in the study of physiology are actuated by motives no less humane than those which guide the persons who desire to restrict their actions, while of the value of any given experiment and the amount of suffering which it involves they are, owing to their special training, much better able to judge. When the men to whom the government has entrusted the care of its higher institutions of research shall show themselves incapable of administering them in the interest of science and humanity, then, and not till then, will it be necessary to invoke the authority of the national legislature.—Ed. Science.]

SCIENTIFIC LITERATURE.

Outlines of Sociology. By Lester F. Ward. New York, The Macmillan Company. 1898. Pp. xii+301.

It is never too late to call the attention of competent readers to a work of the value of Dr. Ward's 'Outlines.' Dr. Ward is one of the few authentic scientists to be met with in the variegated crowd of the so-called 'sociologists.' Every contribution of his deserves, therefore, the most careful consideration.

The book contains twelve papers already published in the *American Journal of Sociology.* It is divided into two parts: (I.) Social Philosophy; (II.) Social Science. By the former Dr. Ward means the study of the relations of Sociology to the other sciences. By the latter he means the study of the laws of society. Hereby Dr. Ward has adopted Professor Robert Flint's view, according to which "each special science and even every special subject may be naturally said to have its philosophy, the philosophy of a subject as distinguished from its science being the view or theory of the relations of the subject to other subjects, and to the known world in general, as distinguished from the view or theory of it as isolated or in itself" (p. viii). We believe this distinction to be entirely misleading. Science means investigation of a well defined group of phenomena. Now, the very act of marking or of ascertaining and setting a limit to the field of inquiry presupposes the discussion of the relationship which the group of phenomena under investigation bears to the other groups of phenomena. Thus, on reflecting well, the task assigned to 'philosophy' by Professor Flint appears to be unavoidably coextensive with one of the fundamental exigencies of the scientific research. As long as the discussion of the relationship of the subject to other subjects is carried out merely with the purpose of defining the boundaries of the field of inquiry, we do scientific rather than philosophic work. Philosophy begins only when the study of the relationship which one group of

phenomena bears to another is made subservient to the purpose of reaching a synthetical interpretation of the cosmical phenomena, what the Germans would term 'Weltanschauung.' The highest unification of knowledge embodied in a conception of the universal evolution is, indeed, the specific problem of philosophy. There cannot be, therefore, the 'philosophy' of a detached fragment of reality. We have on the one side the sciences, among which is sociology, and on the other side, philosophy, which includes and supersedes them all.

For these reasons we should like to have the designation of 'Social Philosophy' dropped from the first part of Dr. Ward's book, which, from beginning to end, ought to be considered as a contribution to 'Social Science.' This would practically leave the book unchanged, but would have the inestimable advantage of eliminating any possibility of confusion arising from the misleading notion of 'Social Philosophy.'

But, apart from this unhappy denomination, we find the contents of Part Ist of Dr. Ward's book extremely interesting. He examines in detail the position which Sociology bears to Cosmology, to Biology, to Anthropology, to Psychology and to the special social sciences. The well-known competence of Dr. Ward as a natural scientist gives a particular value to this review of the different groups of phenomena from which social fact is differentiated. In Chapter VI. Dr. Ward discusses the important question of the position which Sociology bears to the special social sciences. Dr. Ward's view is identical to that of Professor Giddings, whose admirable chapter on the 'Province of Sociology,' in his earlier work, has done more than anything else towards the clear demarcation of the place of Sociology among the sciences. According to this theory, Dr. Ward conceives Sociology as the synthesis of the partial results attained through the distinct investigations of the special social sciences. "No one of these (sciences) nor all of them together can be said to form Sociology, but Sociology is the synthesis of them all. It is impossible to perform this synthesis without a clear conception of the elements entering into it. These, therefore, constitute the data for the process. The special social sciences, then, are not themselves the science of Sociology, but they constitute the data of Sociology" (p. 166).

In the second part of his work, Dr. Ward takes up the discussion of the laws of society. He reproduces his well-known conception of the 'psychic' character of the social forces. The most important chapters are the VIIIth: The Mechanics of Society; the Xth: Social Genesis, and the XIth: Individual Telesis, in which the fundamental lines of the theory are set forth with great clearness. The root of Dr. Ward's doctrine is the assumption that 'the social forces are psychic.' "They have their seat in the mental constitution of the individual components of society" (p. 164). Dr. Ward does not mean the thinking faculty only, as it is understood by the popular conception of the mind, but both the *affective* side of the mind and the *perceptive*, and rather the former than the latter. Feeling is the true foundation of social life. It is the 'dynamic agent,' that which impels and that which moves, the *nisus* of nature transferred from the physical to the psychic world (p. 167). It exerts its power through the myriad forms of appetitive desire constituting impulses or impelling forces and motives or moving forces, all of which may be embodied under the general term will (p. 175). Social progress is either genetic or telic. Progress below the human plane is altogether genetic and is called development. In the early human stages it is mainly genetic, but begins to be telic. In the latest stages it is chiefly telic. The transition from genetic to telic progress is wholly due and exactly proportional to the development of the intellectual faculty. The intellectual method is essentially telic. The intellect was developed as an aid to the will for the sole purpose of securing the more complete satisfaction of desire. It enables man to obtain by an indirect method what he could not obtain by a direct method (p. 179). The moment we rise to the social sphere we encounter the telic aspect of the subject. It is still development or evolution, but a new principle, radically different from the genetic, has now been introduced, and in all the higher forms of social progress it assumes the leading rôle (p. 179, 180). It is the faculty of mind which enables man to pursue ends which it

foresees and judges to be advantageous (p. 237). The human intellect is the great source of telic activity (p. 245).

We fully endorse this view of social evolution, which is, in the main lines, in accord with the results of the most recent investigations (Tarde, Baldwin, Giddings, Barth, Stein). But we must call attention to the fact that Dr. Ward's suggestive theory of social telesis cannot acquire a definite meaning if not interpreted in the light of the Imitation-theory. How does invention, *i. e.*, the normal result of telic activity, act upon the social milieu, thus becoming a 'cause' of transformation of the social conditions? In other words, what is the way of propagation of the typical social force, of the dynamic agent, desire, motive, will power? Dr. Ward is silent on this point. Here, evidently, the leading-string is the Imitation-theory, which once more appears to be the corner-stone of sociology.

In conclusion, Dr. Ward's book is a very valuable work, which will undoubtedly contribute to clear the way of the cumbersome remains of the 'biologic' analogies, thus securing the predominance of the psychological interpretation of society, owing to which the shapeless embryo of science, or, rather, the reservoir of 'mauvaise littérature,' known for so long as Sociology, is gradually being changed into a body of knowledge exhibiting some of the characteristic attributes of science.

Gustavo Tosti.

The Instincts and Habits of the Solitary Wasps. By Geo. W. and Elizabeth G. Peckham. Published by the State of Wisconsin. 1898. Pp. 245. Pls. xiv.

It is not too much to say that this work will be regarded as a classic, not only on account of its scientific value, but also as literature. It has all the lucidity and charm that we are accustomed to associate with Gallic genius, while at the same time its exactness in detail would do credit to a German professor. It is a book of incalculable educational value, for it not only exhibits the delights of intelligent nature study, but shows what admirable work may still be done, in any garden in the country, by persons of either sex and almost any age beyond childhood. It does not lay stress on laboratories or apparatus, nor does it demand the outlay of money; those who would follow in the footsteps of our authors have only to exercise those faculties provided them by nature, and, if they have it in them to succeed, success will be theirs.

But let it not be imagined that the work is easy or simple. There is scope for intellectual exercise to the utmost limit, while physical endurance and patience are essential. Think of the mental attitude of some being from Mars who should be placed in a position to observe the doings in a busy city on this earth. How extraordinary, how inexplicable, would some of our most simple and every-day proceedings appear! How wild would be his guesses as to the meaning of this or that! Yet the student of insect psychology is hardly in a more favorable position, and it requires the closest attention and keenest wit to avoid gross errors of judgment. This is well seen in the fact that our present authors have to correct even the accomplished and painstaking Fabre in many of his important conclusions.

Then as to physical endurance; our authors watched their wasps throughout the long hours of the summer days, and sometimes far into the night. When studying *Ammophila* they write: "For a whole week of scorching summer weather we lived in the bean patch, scorning fatigue. We quoted to each other the example of Fabre's daughter Claire, whose determination to solve the problem of *Odynrus* led to a sunstroke. We followed scores of wasps as they hunted; we ran, we threw ourselves upon the ground, we scrambled along on our hands and knees, in desperate endeavors to keep them in view, and yet they escaped us. After we had kept one in sight for an hour or more some sudden flight would carry her far away and all our labor was lost. At last, however, our day came. We were doing a little hunting on our own account, hoping to find some larvæ which we could drop in view of the wasps and thus lead them to display their powers, when we saw an *urnaria* fly up from the ground to the underside of a bean leaf and knock down a small green caterpillar. Breathless with an excitement which will be understood by those who have tasted the joy of such a moment, we hung over the actors in our little